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Exploring Actual Social Support Using the Social Convoy Model to Assess the Impact on Depression in Adolescents

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Abstract

The current study set out to better understand the differences between availability of support and received support and explore the relation between social support and depression in late adolescents. One hundred and forty participants were recruited from a northwest suburb high school and a college from the eastern central part of Illinois. A social network was formed for each participant using a mapping technique from the Social Convoy Model. The received support measure, the UCLA Social Support Inventory, was used to assess the amount of received support participants identified from their social network. Participants completed the Late Adolescent Social Support Inventory to measure availability of support and the Center for Epidemiologic Studies Depression Scale Revised to measure depression. The correlation between the CESD-R and the LASSI in both student samples were statistically significant; however other subscales for social network sizes and received subscales were inconsistently related to depression. A two (type of received support) by three (intimacy level) by two (sample; high school or college) repeated measure ANOVA was conducted on total received support and indicated significant main effects for level of intimacy and type of received support; as well as a significant 3-way interaction. Results from multiple stepwise regression analysis indicate that the LASSI was the best predictor of depression accounting for 29% of the high school variance and 21% of the college variance.

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Around 20% of adolescents today have developed depressive symptoms (Pössel et al., 2018). The World Health Organization has listed depression as one of the leading causes of suffering and suicide is the third leading cause of death among 10 to 19 year old adolescents in the United States (Lu, 2019; Shaheen, 2016). Adolescents are particularly at risk for suicidal ideation, suicidal attempts, and nonsuicidal self-injury because of being bullied, having higher amounts of reported depressive symptoms, and having a smaller social network. Adolescents with depression discharged from hospitalizations are most susceptible to attempt suicide 6 months to a year after discharge (Lamis et al., 2016; Prinstein et al., 2008; Stewart et al., 2018). The high rate of depression among adolescents makes it crucial to find ways to support this population.

Scholars have argued that social support can serve as a protective factor against depression (Luo et al., 2017; Santini, 2016; Vélez et al., 2016). Social support is defined as a set of behaviors from individuals that are intended to increase the well-being of another person (Kim et al., 2008; Malecki & Demaray, 2002; Uchino, 2009). Adolescents who received positive social support had reduced depressive symptomology and increased independence (Katainen et al., 1999; Lee & Dik, 2017). On the other hand, a lack of social support has been associated with a lower level of well-being for people in late adolescence and early adulthood (Alsubaie et al., 2019; Awang et al., 2014; Lakey & Orehek, 2011; Stice et al., 2004).

Researchers of social support typically focus on two different types of social support: perceived availability and received social support. Perceived availability of social support, or availability of support for short, focuses on the perception of a person and how much support

they believe they have available to them if they need it (Gayman et al., 2011; Malecki & Demaray, 2002; Pettit et al., 2011; Zimet et al., 1988). Received social support refers to the direct assistance, emotional support, and any tangible service that a person actually gets from another person. In essence, received support is noting the actual amount of support a person is receiving from others in their life (Hartley & Coffee, 2019; Lindorff, 2005; Thoits, 2011; Thomas, 2010; Wang, 2019).

There is an overwhelming tendency for social support research to focus on availability of social support rather than support actually received (Harter, 1985; Malecki & Demaray, 2002; Zimet et al., 1988). Received social support is harder to quantify and measure which has resulted in fewer researchers devoting attention to it (Rueger et al., 2016). Expanding research on received social support can help assess whether there are mental health benefits for receiving actual social support from others.

One way to quantify the amount of support received is to examine the size and nature of a person's social network. Social networks are constructs used to identify people that an individual interacts with in their daily lives (Dunkel-Schetter et al., 1986; Siedlecki et al., 2014). For example, a social network may be a collection of friends, family, and acquaintances that live in one's community. A social network may be used in identifying people who provided received social support for an individual.

Only a limited amount of research has investigated the social networks of adolescents and assessed how much social support the person is receiving from members in their social network (Rueger et al., 2016). This method may be used to gain a more accurate depiction of how much received social support an individual receives. This may help develop a better way to measure

received support and assess whether received support has an impact in buffering against depression.

Past researchers have looked at received support by assessing emotional closeness with social networks in adults (Huxhold et al., 2013; Wethington & Kessler, 1986) or emotional closeness with received support by using diary methods (Morelli et al., 2015). There is a need to look more closely at received support however in the adolescent population.

Importance of Social Support

The influence of social support has been studied thoroughly for the last half century (Barrera, 1986; J. S. House, 1981; Wills & Shinar, 2000). Social support has been linked to health benefits including an increased longevity of life for adults and chronically ill adolescents (Martire & Franks, 2014) and the formation of better daily habits for adults and adolescents with depression (Reblin & Uchino, 2008; Vélez et al., 2016). In addition, social support has been associated with positive outcomes such as providing coping strategies and increasing academic achievement in adolescents (Clark et al., 2020; Luo et al., 2017; Manczak et al., 2018). Adolescents with emotional and instrumental supports reported higher life satisfaction and well-being (McGrath et al., 2009; Morelli et al., 2015; Siedlecki et al., 2014). Social support is linked to stronger health outcomes, but most research focuses on availability of support. There is limited research on health outcomes for received social support in any population, and there is even less research on received support in an adolescent population (Rueger et al., 2016; Thoits, 2011).

During stressful life events, there are concerns for adolescents without social support. Stress is associated with higher rates of depression, suicidal ideation, and anxiety (Lamis et al., 2016; Rankin et al., 2018). Adolescents who perceived that their emotional needs are greater

than the amount of actual received support tend to have more depressive symptomology (Rankin et al., 2018). Researchers have found that late adolescents are likely to have more depressive symptomology when social support is scarce (Galambos et al., 2004; Ge et al., 2009; Gutowski et al., 2018; Siedlecki et al., 2014). Despite this, researchers have found it hard to determine whether social support impacts depression directly or if social support helps indirectly by reducing stress (Pössel et al., 2018). It is also possible that depression leads to lower reported social support (Hefner & Eisenberg, 2009; Lamis et al., 2016).

Types of Social Support

There has not been a clear consensus for the definition for social support (Sarason et al., 1983; Williams et al., 2004); however, there has been greater agreement on the distinction between the two constructs of availability of support and received or enacted support (Rueger et al., 2016). Although, inconsistent language in the literature may further complicate whether researchers are using received or available supports of measurements (Rueger et al., 2016; Wills & Shinar, 2000).

Availability of social support can be defined as how much assistance a person believes is available to them when they need it. Adolescents may perceive that support could come from teachers, counselors, coaches, peers, and family members. Availability of social support – self-report measures of how much an individual believes they have available to them -- is the most common method of measuring availability of social support (Harter, 1985; LASSI; Scher et al., 2020; Malecki & Demaray, 2002; Zimet et al., 1988).

The Late Adolescence Social Support Inventory (LASSI) is an availability of social support measure that has been used for both college and high school students (LASSI; Scher et al., 2020). Scher et al. found that a scale formed from the LASSI was negatively correlated with

depression, as measured the Center for Epidemiological Studies Depression Scale, Revised (CESD-R ; Eaton et al., 2010) among a sample of college students and among a sample of high school students.

However, availability of social support is not the only aspect of social support that must be considered. There is a limited amount of research on received support when compared to availability of social support (Rueger et al., 2016) and there may be benefits to assessing received support compared to availability of support (Hartley & Coffee, 2019; Uchino, 2009; Wang, 2019).

Received or enacted social support refers to the quantifiable amount of support being provided through direct service assistance, tangible assistance, or emotional (Siedlecki et al., 2014; Wills & Shinar, 2000). A major concern for received support is that it is often more difficult to measure than availability of support. The level of support an individual has received is measured in several ways. One way received support is measured is by collecting reports of specific support transactions, either retrospectively or tracking when support occurs through diary methods (Bolger et al., 2000; Kim et al., 2008).

In addition, there are received support measures that specifically ask how often someone has received support in the last month such as the Inventory of Socially Supportive Behaviors (ISSB; Barrera et al., 1981). This type of received support measure does not directly ask about specific people that are giving a person received support. Another way of measuring received support is through social networks. Social networks can be used to measure received support by identifying people in an individual's network and assessing how often each person in the network is providing support to the individual (Dunkel-Schetter et al., 1986; Siedlecki et al., 2014). Some authors (Rankin et al., 2018; Wethington & Kessler, 1986; Wills & Shinar, 2000)

have referred to the availability of support with the term perceived support, using the term actual support to reflect perceptions of support given. This can be misleading, however, because like measures of perceived support, most measures of received or enacted support are self-report measures, and therefore also reflect the perception of the recipient.

The individual's perception of support received may not, in fact, correspond to the amount of support directly given. This concern recognizes that individual differences in memory or perception of support may lead to an unreliable measurement of social support received (Haber et al., 2007). Furthermore, Bolger and colleagues (Bolger et al., 2000; Bolger & Amarel, 2007) have shown that gaps between support provided and support recognized by the individual is meaningful: Support provided that is not perceived by the recipient (invisible support) has a greater effect on stress-reduction than does support that the recipient is aware of. Bolger and colleagues (2000) argued that an individual may find it more distressing when they recognized they received support because they recognize they needed help.

One received support measure is the UCLA Social Support Inventory (UCLA-SSI; Dunkel-Schetter et al., 1986). This measure is like other received support measures as it relies on self-report to measure received or enacted support. This measure specifically asks whether college students were receiving common types of support (e.g., information and advice, aid and assistance, and emotional support (House, 1988) from their friends, parents, or romantic partners.

Difficulties Measuring Received Support

It would be helpful to have an objective measure of received support that does not rely on the target's perceptions; however, this is difficult and has rarely (if ever) been done. As a result, the number of received support measures is limited when compared to measures of the availability of support; moreover, very few received support measures have been developed or

have specifically focused on an adolescent population (Wills & Shinar, 2000). Tracking received support through a daily or weekly questionnaire is one way received support has been measured (Bolger et al., 2000; Wethington & Kessler, 1986). This method, however, can be subject to error. For example, a person may not correctly identify certain aspects of social support and therefore may underreport the amount of support received. An ideal way to record received support would be to track individuals and record every time there is an instance of social support (i.e. giving money, providing emotional support by listening to someone's problems). However, this process is impractical – even for a single subject research case design.

Likely because of the difficulty in objectively measuring actual social support, few studies have examined enacted or received support. For example, in a meta-analysis reviewing the relationship between social support and depression in adolescents (Rueger et al., 2016), only twenty studies out of the 341 studies reviewed (5.86%) focused on received/enacted support or a combination of enacted support and availability of support. The twenty enacted social support studies included ten studies using social networks (50%), two studies using measurement of emotional closeness or intimacy (10%), one study focused on instrumental support (helping behaviors/financial support) (5%), and the remaining seven studies were unspecified records of received social support (35%). Even in this small sample of received support, 35% of the studies were unspecified types of received support which further illustrates that even when received support measures are used, it is still unclear what specific type of received support measure it is (Rueger et al., 2016). In addition, this meta-analysis did not include any studies regarding diary received support indicating that the researchers had trouble identifying received support studies.

Furthermore, Rueger and colleagues (2016) commented that it was particularly difficult to consistently differentiate enacted/received support from availability of support when coding

studies. Researchers often are not using consistent terms when discussing received and available support. This makes it clear that there is a need for a consistent and universal definition for social support for received and availability of support among scholars. Rueger and colleagues (2016) argued that a better distinction between available and received/enacted support is needed and that a more concise scale for received support may be useful.

Social networks have been used to identify received support, but more research is needed in this area particularly for adolescents (Falci & Mcneely, 2009; Rueger et al., 2016). Social networks provide an opportunity to help further research received support by using self-report measures. Although social network measures still rely on self-report and are ultimately another estimate of support, they are more likely to give a detailed quantitative measure of support provided. It may be more useful to identify the size of a network and actual support through social networks, as opposed to a summary measure of subjective feelings of support received that use questions that are not specific to the individuals providing support (Huxhold, Fiori, & Windsor, 2013; Levitt, Guacci-Franco, & Levitt, 1993).

The Need for More Research on Received Support

Scholars have argued that an individual's availability of support has a greater impact on their feelings and behaviors then the amount of support the individual actually receives (Barrera, 1986; Feeney & Collins, 2015; Ritakallio et al., 2010; Thoits, 2011; Wethington & Kessler, 1986). Many researchers have found that lower availability of support has been correlated with higher levels of depression for adolescents and elderly (Perkins et al., 2013; Ritakallio et al., 2010; Scher et al., 2020). Barrera (1986) suggested that increased enacted support may lead to distress for individuals or that people who are experiencing more stress may be provided more

received support from others (Bolger et al., 2000), both of which would reduce the correlation between received support and depression.

Yet much is still unknown about received support especially when compared to availability of support. The previously mentioned difficulties in measuring received support may affect the strength of the observed relationship between the construct and outcome measures. Some studies regarding received support have been in contradiction in how received support relates to stress or depression. Therefore, instead of focusing solely on availability of support measures, more research is needed in identifying received support and how it relates to depression and other outcomes.

Several findings support this position. For example, although evidence suggests a stronger stress-buffering effect for availability of support compared to received support (Rueger et al., 2016), individuals under a high amount of stress do significantly benefit if they have a greater number of social supports (Rodriguez et al., 2018; Rueger et al., 2016). Specifically, when defining social support by the support being given by members of a network, received support predicted psychological well-being over other measures and showed that high social support in the presence of high stress was associated with better psychological well-being (Rodriguez et al., 2018). Others have argued that received social support can have a positive impact if the type of support is considered in relation to the types of stressors one is facing (Cutrona & Russell, 1990). For example, literature reviewed by Cutrona and Russell (1990) found that adolescents who receive greater tangible support during economic hardship or serious illness have better emotional or mental health outcomes.

Not only does a match between the stressor and support type affect the effectiveness of received support, so does the match between received support and expected support or

perceptions of needed support (Melrose et al., 2015; Rahim, 2009; Rankin et al., 2018). It thus seems worthwhile to explore more effective measures of received support and further examine the relationship between received and availability of support and outcomes such as depression level. One method that may be useful in doing so could be using social networks to identify members providing support and a questionnaire that asks about how often these social network members provided support. This may give a more vivid picture of received support.

Social Networks

Social networks are an alternative method for examining received support. A social network is described as a set of significant relationships of an individual (Palumbo et al., 2015). Meaningful social networks function as a coping resource and facilitate supportive relationships that strengthen the well-being of a person (Pearson, 1986). Social networks typically examine social support through the lenses of the structure and function of the network. The structure of a social network is related to the number of social relationships or the frequency of contact someone has with each social network member or the level of intimacy between the person and each network member (Harasemiw et al., 2019; Mejía & Hooker, 2014; Sherman et al., 2015). The function of a social network is the type of support that is given by social network members. For example, functions are defined by emotional support (e.g., how often does a person address your emotional needs) and instrumental support (e.g., caring for an individual when sick, giving advice; Cheng, Lee, Chan, Leung, & Lee, 2009; Levitt et al., 1993).

These specific functions are often assessed through questionnaires in relation to asking about certain people within the network. For example, one social network study that focused on structure and function asked adolescents to name up to 10 friends at school. Then students were asked to answer questionnaires regarding reciprocated friendships, availability of support

measures and depression rating scales (Falci & Mcneely, 2009).Adolescents with fewer friends reported lower levels of availability of support and belongingness. Number of friends had a curvilinear relationship with depression: Those adolescents reporting very few and those reporting very many friends had higher levels of depression then those with a more average number of friends.

Other studies have focused on social networks of the elderly or adult populations. These social network studies identified how many social ties (children, friends, siblings, etc.) participants had and then used questionnaires to inquire about the function of their relationship with members in their social network (Cheng et al., 2009; Zunzunegui et al., 2008).

Some researchers have used the Social Convoy Model to map a social network and then assess emotional closeness of members or how a social network changed over time (Kahn & Antonucci, 1980; Levitt, 2005; Silva et al., 2018). Larger social networks have served as a protective factor against depression for adolescents but having too large of a network can also be detrimental (Falci & Mcneely, 2009; Santini, 2016). Adolescents with a larger social network who received emotional support from three separate individuals in their network reported lower levels of depression (Werner-Seidler et al., 2017). In addition, social support characteristics like having positive quality relationships are inversely related to depression and lead to alleviating stress within social networks (Achat et al., 1998; VanderVoort & Skorikov, 2002). Therefore, wellbeing may be dependent on receiving emotional support among members in a person's social network rather than just availability of social support.

A social network has helped identify a closer representation of the actual people who are providing support through questionnaires (Falci & Mcneely, 2009; Thomas, 2010; Werner-Seidler et al., 2017). Received support measures are difficult to use through diary methods

because of the impracticality of measuring received support consistently, but social networks provide more efficient and potentially more accurate self-report by examining received support and frequency of contact from specific people in their network (Falci & Mcneely, 2009; Werner-Seidler et al., 2017). In addition, social networks provide more accurate accounts of received support because they can be tied to members of a social network and social networks are used to provide quantifiable information about the amount of support (Clark et al., 2020; Feeney & Collins, 2015; Fiori et al., 2006; Thomas, 2010).

Social networks have helped researchers interpret how close or intimate a relationship is within their network (McGrath et al., 2009; Werner-Seidler et al., 2017). Adolescent girls who felt they had low intimacy or closeness with their romantic interest, had cognitive reactivity in a negative mood and a higher likelihood to be depressed (Williams et al., 2001). In terms of intimacy, social network members who are considered the most important may provide more received support through tangible aid and emotional support because they are more invested in the relationship (Thoits, 2011; Thomas, 2010). If the most intimate members of a social network provide more received support, then this could play a factor in decreasing stress and depression. Meanwhile, individuals who are considered less important to someone's life may be more likely to provide tangible or informational received support rather than emotional. However, since there has not been research regarding intimacy and received support, it is hard to predict what sort of impact these constructs have on depression. Using a social network may provide a more accurate depiction of how much a person is being supported and its effects on depression.

Social Convoy Model

Kahn and Antonucci (1980) created the Social Convoy Model to help identify social networks. This model uses a diagram consisting of three concentric circles. This layout is used

for a person to identify their own social network by including a list of names within each of the three separate concentric circles. Each circle represents a varying degree of closeness or intimacy (Levitt, 2005; Sherman et al., 2015; Silva et al., 2018). The model works by asking participants all the people closest to them and sorting these people into one of three distinct circles (Sherman et al., 2015; Silva et al., 2018). First, participants are asked to identify the people who are so important to them that they cannot see their lives without them. These identified people are labeled within the inner concentric circle located at the center. Next, participants identify people they are not as close to, but still identify as important to their lives. These identified people are labeled in the middle circle between the two other circles. Lastly, the outer circle is for any people who are not as important in their lives, but still play a role. These identified people are placed in the most outer circle.

Many researchers have used the Social Convoy Model in the past by either interviewing participants or using web-based forms using the three concentric circles to map out a social network of an individual (Levitt, Guacci-Franco, et al., 1993; Mejía & Hooker, 2014; Perkins et al., 2013; Silva et al., 2018). Other researchers used a variation of the model in which they asked participants to report up to a certain amount of people they considered important and had regular contact with to create a social network (Fiori et al., 2006; Huxhold et al., 2013). For instance, Fiori, Antonucci, and Cortina (2006) used the same method with the Social Convoy Model with elder adults aged 60 or higher to see if the variability of one's social networks had any influence on depressive symptomology. Other studies using the Social Convoy Model compared the social network created by the convoy model to well-being measures (Perkins et al., 2013) or social support scales (Mejía & Hooker, 2014; Silva et al., 2018). The authors found that the individuals with a diverse social network based on the Convoy Model had lower depressive symptomology.

However, there has been little research conducted with the adolescent population using the Convoy Model (Levitt, 2005). The current study seeks to increase the size of that literature.

Convoys are considered protective networks of close social ties (Sherman et al., 2015). The identification of a social network using the Social Convoy Model has several different components. After respondents identify the members within a person's social network (all members in the inner circle, middle circle, and outer circle), then additional questions can be asked about the social network itself or the well-being of the individual (Mejía & Hooker, 2014; Silva et al., 2018). Typically, respondents reported the frequency of contact that they had with each person in their social network. This is commonly done by using a questionnaire to assess how many times a person has interacted with those in their network or identifying how much support a person is receiving from each member of the network.

The Social Convoy Model specifically measures the number of individuals within a social network in an efficient and quantifiable way that allows a person to distinguish their network in three levels of intimacy (Kahn & Antonucci, 1980). This is a benefit to researchers interested in quantifying the amount of received support because it provides an opportunity to use a questionnaire that specifically asks about received support within a person's social network and may be examined through intimacy level or emotional closeness. There has not been research using this model to identify received support within a network for adolescents. Therefore, this model may be used in a new way that may contribute to better understanding received support and assess what effects it may have on the wellbeing of individuals.

Current Study

The current study used the Social Convoy Model (Kahn & Antonucci, 1980) in conjunction with items selected from the UCLA-Social Support Inventory (Dunkel-Schetter,

Feinstein, & Call, 1986) to assess the actual size of a social network and the amount of received support from individuals within the network. The UCLA-SSI is a unique received support measure as it asks questions about received support geared toward specific people with a certain relationship role (i.e., girlfriend/boyfriend, close friend, and parent). Researchers have used the UCLA-SSI to compare the relationships of received support and availability of support to insecure cognitive attachments and depression among adolescents (Herzberg et al., 1999; Rao et al., 2010). The UCLA-SSI has been modified in this study to be directed to a specific member in a social network. The benefits to combining these two measures is that received support measures have not relied on asking specifically about people that others interact with to assess how much support they have attained (Clark et al., 2020; Feeney & Collins, 2015; Huxhold et al., 2013). Creating a social network and assessing the received support given by members of the network provided an opportunity to perhaps get a more accurate reflection of received support. Additionally, not many received support measures have been used in the adolescent population (Gottlieb & Bergen, 2010; Rueger et al., 2016) and this study aimed to expand our understanding of the functioning of received support within this population.

The current study examined the relation between availability of support and received support as predictors of depression. The LASSI as a availability of support measure has been shown to be a good predictor of depression (Scher et. al., 2020). A lot of research has studied availability of support relating to depression, but limited research has compared it with received support specifically when received support is looked through the lenses of social networks (Fiori et al., 2006; Rueger et al., 2016).

Research Questions and Hypotheses

The current is study is unique because the method of using a social network to find a measurable received support has rarely been done before especially when tied to specific individuals within someone's social network. The following research questions and hypotheses were made for the current study:

1. Both availability of support (LASSI) and total received support (UCLA-SSI) were expected to have a significant inverse correlations with depression (CESD-R). By using the Social Convoy Model to better identify received support, it was hypothesized that received support would become a better predictor of depression than demonstrated in previous research (Clark et al., 2020; Huxhold et al., 2013).

2. Is there a relationship between availability of support and received support? Will there be a positive correlation between the LASSI (availability of support) and the UCLA- SSI (received support)? Although correlations between availability of support and received support have been mixed in different studies (Lakey & Orehek, 2011; Thoits, 2011), few studies have looked at received support in the context of social networks especially for adolescents (Rueger et al., 2016; Wills & Shinar, 2000).

3. Do participants identify more received social support within the more intimate levels of the social network (i.e., inner compared to middle; middle compared to outer; inner compared to outer)? Will there be a difference in received support type (nontangible and tangible support) across intimacy level? It's predicted that a larger amount of total received support will be identified in closer levels of intimacy. It's expected that a larger amount of nontangible support will be identified across intimacy levels compared to tangible support. According to Bolger and colleagues (2000), more overt forms of received support may impact depression because participants who are aware of receiving support may feel negatively that they need support.

Therefore, the inner circle nontangible support was expected to be a better predictor of depression than inner tangible support.

4. Does the total social network size correlate inversely with depression? Does intimacy level play a factor in predicting depression? Does a larger intimate social network size (inner circle network size) correlate with depression? Does identifying more social network members within different levels of intimacy better relate to lower levels of depression? The predictions made regarding network sizes include that individuals who list more members in the most intimate circle were expected to have lower depression scores. It was hypothesized that a larger overall social network and a larger inner circle social network were more likely to buffer against depression (Levitt, Guacci-franco, et al., 1993; VanderVoort & Skorikov, 2002).

5. Does identifying more received support within closer levels of intimacy better relate to lower levels of depression? The predictions made regarding received support include that individuals who list more received support in any of the levels of intimacy, specifically within their most intimate circle, were expected to have lower depression scores. In addition, the amount of received support within the inner circle were expected to have a significant negative correlation with depression (Huxhold et al., 2013; VanderVoort & Skorikov, 2002).

Methods

Participants & Setting

A total of seventy-three high school students and seventy-five college students provided complete data for the study. University students were gathered from a mid-sized Public, Masters-level university in East Central Illinois. High school students were gathered from a large high school in Northwestern Illinois. It should be noted that all data were collected during the COVID-19 pandemic while participants were mostly attending school remotely. Only students

who completed all measures were included in the study and high school students needed parental consent or be 18 or older to participate.

For the high school sample, there were 28 Freshman (37.3%), 11 Sophomore (14.7%), 18 Junior (24.0%), and 17 Senior (22.7%). In addition, one student (1.3%) did not identify their academic grade. There were 21 males (28.0%) and 51 females (68.0%). In addition, there were 2 students (2.7%) who did not answer the gender item and 1 participant who responded other (1.3%) for the gender item in the high school sample. The age of high school students ranged from 14 to 18 years (M=15.75, SD =1.38).

There were 38 Freshman (52.1%), 20 Sophomore (27.4%), 8 Junior (11.0%), and 7 Senior (9.6%) students in the college sample. The gender makeup was 16 males (21.9%) and 55 females (75.3%). One student (1.4%) did not answer the gender item and one student (1.4%) identified as other for gender. The age of college students ranged from 17 to 25 years (M=19.53, SD = 1.92). Participant race is reported in Table 1.

Table 1.

Race Identification of Students

	High School	College	Overall
White	57 (77.0%)	56 (76.7%)	113 (76.4%)
Black or African American	6 (8.1%)	10 (13.7%)	16 (10.8%)
Asian	3 (4.1%)	2 (2.7%)	5 (3.4%)
Native Hawaiian or Pacific Islander	1 (1.4%)	0	1 (0.7%)
Other	8 (10.6%)	5 (6.8%)	13 (8.8%)

Measures

Demographics questionnaire.

The demographic questionnaire was the initial measurement that participants completed. The demographic questionnaire included items about the participants grade-level, gender, age, and racial identity. The demographic questionnaire differed for college and high school students. Grade level options for high school students included Freshman (9^{th}), Sophomore (10^{th}), Junior (11^{th}), and Senior (12^{th}). Grade level options had college students indicate their academic class as Freshman, Sophomore, Junior, or Senior. The options for age in the demographic questionnaire for high school students included ages 13 years or younger to 18 years or older. The age options for college students ranged from 17 years or younger to 25 years or older. Participants could identify as male, female, other, or prefer not to say when responding to gender. Participants were given the options for racial identity based on the U.S. Census Bureau: White, Black or African American, Asian, American Indian or Alaska Native, Hispanic, Native Hawaiian or Other Pacific Islander, or Other.

Center for Epidemiological Studies Depression Scale- Revised (CESD-R).

The CESD-R was developed as a revision of the original Center for Epidemiological Studies Depression Scale (CESD; Radloff, 1977). The CESD-R (Eaton et al., 2004) is a self-report assessment used to measure depressive symptoms for the general population and adolescents aged 12 to 18. It lists 20 symptoms of depression and participants are prompted to rate how often they have experienced the symptom over the past week. Frequency of symptoms are rated on a four-point Likert-scale ranging from 1 (“rarely or none of the time”) to 4 (“almost or all of the time”).

The CESD-R has high internal consistency (α =.92), and high convergent validity with the Beck Depression Inventory when using a college sample (Haroz et al., 2014; Van Dam &

Earleywine, 2011). The CESD-R has shown high construct validity and negative correlation with self esteem measures and social support measures in adolescent samples (Haroz et al., 2014). Although, there are few studies testing the psychometric properties of CESD-R with high school students, studies have found high internal consistency and convergent validity with this population using the CESD and with the CESD10 (a shortened form of the CESD-R; Bradley, Bagnell, & Brannen, 2010; Haroz et al., 2014).The CESD-R has high internal consistency reliability ($\alpha > 0.90$) along with high test-retest reliability (Radloff, 1977; Scher et al., 2020). In addition, the CESD-R has had expected correlations with social support and stress in both college and high school samples (Scher et al., 2020).

Social Convoy Model.

The Social Convoy Model (Kahn & Antonucci, 1980) is a method for gathering information on a person's social network. Participants identify members of their social network by placing them in one of three concentric circles representing various degrees of closeness or level of intimacy (see Appendix for Social Convoy Mapping). Using this model, participants identify people within each circle to establish a social network and use additional measures to ask about members in their social network (Levitt, 2005; Perkins et al., 2013; Sherman et al., 2015).

For this study, participants could select up to 10 members for each level of intimacy or degree of closeness. For example, participants were shown a diagram showing three concentric circles with one circle colored in and were shown a prompt that stated "Think of the people in your life that you can't imagine living without. Those people belong close to you in the yellow circle. Please list the initials of up to ten of these people in the spaces below. List only people who belong in the Yellow Circle, that is, only people you can't imagine living without." For the

middle (Blue) circle, participants were asked "to list people who you may not feel as close to as the people you listed in the previous question (yellow circle), but they are people who are important to you and are still big parts of your social network." Finally, for the outer (Green) circle participants were asked to list "people who are still part of your social world, but who are not as close as the people in the Blue and Yellow Circles."

The total network size may range from three to thirty individuals based on a person's selection of individuals in each of the three concentric circles. In addition, network size at level of intimacy (inner, middle, and outer) was coded. For each intimacy level, participants could choose 1 to 10 people.

The Social Convoy Model was used in conjunction with other measures to identify the frequency of contact with social network members (Fiori et al., 2006), compare social network size to well-being measures (Perkins et al., 2013), and compare it to other social support measures (Duval & Silvia, 2001; Mejía & Hooker, 2014). The Social Convoy Model has shown strong test-retest reliability ($r > .75$), has had strong internal consistency across all dimensions ($\alpha > .83$), and yielded a single factor with all items loading high on one construct (Levitt et al., 1993; Silva et al., 2018) For this study, the Social Convoy Model was used in conjunction with the UCLA Social Support Inventory, a received support measure, to determine total received support based on social network members.

Short Version of the UCLA Social Support Inventory (UCLA-SSI).

The UCLA-SSI (Dunkel-Schetter,et al., 1986) is a 36 item self-report questionnaire that focuses on the perception of received support. Rao et al. (2010) developed a 9 item version which asks individuals to assess how often they received support within the last 3 months from specific people. The original scale had three subscales (tangible/aid, emotional and

informational; Dunkel-Schetter et al., 1986; Herzberg et al., 1999). These three factors have been broken into these nine items in the following way: two items ask about informational support, two about aid/tangible support, and five about emotional support .

After identifying their social network by completing the Social Convoy Model section, Qualtrics selected a randomized person from each circle from the choices that the participant identified. For each randomly selected person, the participant identified the relationship with this person. Seven relationship categories were available to choose from. The categories were parent/guardian, sibling, extended family member, teacher/coach, friend, significant other (boyfriend, girlfriend, or spouse), and other. Participants were then asked to complete the 9 items from the UCLA-SSI in reference to that person.

Participants responded to a frequency rating on Likert-scales that range from answers of 1 (Never) to 5 (Very often). Example items include (using a person in the Convoy Model as an example, i.e., John): “How often did John provide useful information or advice in the past three months (e.g. provided information to help you make a decision)?” (Nontangible/Informational); “How often did John provide major assistance within the past three months (e.g. moving, a ride somewhere pretty far away, providing a large amount of money etc.)?” (Tangible); “How often did John convey respect, approval, and/or acceptance within the past three months (e.g. respect your opinion or beliefs, accept a mistake you may have made etc.)?” (Nontangible/Emotional).

Late Adolescent Social Support Inventory (LASSI).

The LASSI (Scher et al., 2020) is an inventory that is used to assess the availability of social support for late adolescents (grades 9 through college). This scale uses thirty-six items derived based on House’s (1981) four types of social support: emotional, informational, instrumental, and appraisal. The LASSI uses a frequency rating Likert-scale ranging from 1

(Never) to 5 (Very Often). Participants reported on how frequently they perceived the availability of social support.

In the initial study for the LASSI, one hundred and twenty high school and college students from the Eastern Central parts of Illinois were recruited for the sample. The reliability of the scale in the initial development sample was excellent (e.g., Chronbach's alpha greater than .95) and validity was demonstrated by predicted correlations with scores on the CESD-R (r=-0.47 for high school students and -0.44 for college students; Scher et al., 2020). Stress as measured by the Perceived Stress Scale (Cohen et al., 1983) (r= -0.51 for high school students and -0.38 for college students). Factor analysis suggested a 1-factor structure for the scale.

Procedures

After securing IRB approval and permission from the principal and district administrators, participants were recruited from a large high school in Northwestern Illinois by attending their physical education and health classrooms (remotely) to advertise the study. Students filled out a google survey (consent) form indicating if they agreed to have the principal investigator email their parents to participate in a research study about social support.

After the students expressed interest in participating in the study via the google survey, the principal investigator reached out to the student's parents through email for all students under the age of 18 to gain parental permission. The student's parents were given details about the research study and were provided a google survey form to obtain parental consent for their students to participate in the study. Students were emailed a Qualtrics link to participate in the study only after receiving parental consent or if the students were 18 years old or older. As an incentive, ten high school students were randomly selected to receive a $25 Amazon gift card.

University students completed the research as part of a research participation requirement in their Psychology classes at a mid-sized Public, Masters-level university in East Central Illinois. The university instructors granted access for students in their class to use the SONA portal to participate in research studies. The questionnaire was available through the online SONA system where students from the class may choose to participate in a variety of research studies. Consent was attained for college students at the start of the questionnaire. Two separate Qualtrics surveys were used—one for college students and one for high school students. The Qualtrics survey was sent via email to high school students after receiving parental consent. It presented the measures in the following order: consent, demographics, the Social Convoy Model, the UCLA Social Support Inventory, the LASSI, and the CESD-R.

College students completed the LASSI as part of a separate prescreening survey offered to all students participating in the SONA system when they first registered for in the system. They completed all the other questionnaires for the survey (CESD-R, Social Convoy Model, and UCLA-SSI) as part of a separate study, for which they received separate research participation credit.

Results

Response Rate & Sample Analyses

One-hundred and twenty-six high school students and ninety-four college students began the study. Fifty-one (40.5%) of the high school students and twenty-one (22.3%) of the college students did not complete one or more of the central variables of the study. The missing data set for high school students may have been higher than college students because college students completed the LASSI in a separate prescreen session, and therefore had fewer questions to answer at one sitting.

Separate chi-square tests for the college and high school samples comparing participants with complete data to those with incomplete data on Race, Gender, and Academic class were not significant, except for the test for Race among college students (χ^2 (3) = 9.56, p<.05). A greater percentage of African American college students (n=9, 47.4%) had missing values, compared to students identifying as White (n-missing = 10, 15.2%) or those identifying their race as Other (n-missing = 2, 28.6%; both college-student participants identifying as Asian completed the study; no students in the college sample identified as Native Hawaiian or Pacific Islander). Separate t-tests for college and high school samples comparing the ages of participant who completed the study to those who did not, were not significant. Those who did not complete the study were deleted from the study, leaving an effective sample of 75 high school students and 73 college students.

Scale Formation

Principal components analysis with an oblique rotation was conducted for each sample separately for each level of intimacy (inner, middle, and outer circles) for the UCLA Social Support Inventory. Although, the UCLA Social Support Inventory was originally designed to have three subscales (i.e., emotional, tangible, and informational support; Dunkel-Schetter et al., 1986), three component solutions were inconsistent with each other and inconsistent with the structure proposed by Dunkel-Schetter et al.. A two-component rotation, however, produced consistent solutions across all six analyses (3 levels of intimacy, two samples), with only two cross loadings (Table 2; loadings greater than or equal to .300 shown in table). Therefore, two subscales were created by averaging 7 nontangible support items (1, 2, 5, 6, 7, 8, and 9) and 2 tangible support items (3 and 4).

Table 2.

Principal Component Analysis of the UCLA Social Support Inventory.

Items	Inner Circle				Middle Circle				Outer Circle			
	High School		College		High School		College		High School		College	
	Non-Tang	Tang	Non-Tang	Tang	Non-Tang	Tang	Non-Tang	Tang	Non-Tang	Tang	Non-Tang	Tang
7- convey encouragement and reassurance	.911		.913		.866		.947		.799		.892	
8- listen to concerns and feelings	.890		.804		.903		.835		.911		.892	
9- understand and empathize	.859		.929		.872		.904		.913		.977	
6- convey respect, approval, and/or acceptance	.792		.815		.874		.936		.946		.817	
5- convey love and caring	.776		.806		.661		.708		.753		.359	.517
1- provide useful information on decision	.671		.798		.586		.771		.739		.821	
2- provide information or advice about a relationship	.643		.672		.588		.586		.542		.636	
3- provide minor assistance		.913		.819		.853	.370	.549		.939		.873
4- provide major assistance		.840		.941		.904		.932		.884		.875

NOTE: Principal Components Analysis with an Oblimin rotation. Loadings less than .300 are not shown.

Scores for the CESD-R, the LASSI, and received support (i.e., Inner circle nontangible, inner circle nontangible, etc.) were formed by averaging the items for each scale. Cronbach Alpha levels were ranged from high to moderate (but acceptable) for all the scales or subscales (Table 3).

Table 3.

Cronbach Alpha Levels for subscales for College and High School students

	High School	College
LASSI	.97	.98
CESD-R	.93	.91
Inner Circle Nontangible	.91	.93
Inner Circle Tangible	.76	.78
Middle Circle Nontangible	.89	.93
Middle Circle Tangible	.75	.67
Outer Circle Nontangible	.92	.93
Outer Circle Tangible	.85	.74

Comparison of differences between samples

An independent t-test (Table 4) was conducted across all subscales comparing the high school and college students. The only significant difference between the two samples was found in the total inner circle social network number between high school (M = 6.73, SD = 2.58) and college (M = 7.56, SD = 2.31) students (t (146) = -2.06, $p < .05$). All other subscales did not have a significant difference between the two sample sizes. As a result of the differences between the total inner social network sizes, all analyses were conducted separately for high school and college samples.

Table 4.

Independent sample t test comparing High School and College students across all subscales

Variables	High School			College			Total		*t*	Sig. (2 tailed)
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*		
CESD-R	1.97	.60	75	1.98	.58	73	1.97	.59	-.03	.98
LASSI	3.97	.66	75	3.91	.76	73	3.94	.71	.58	.57
IC TANG	3.33	1.18	75	3.12	1.19	73	3.23	1.18	1.12	.27
MC TANG	2.39	1.12	75	2.26	1.05	73	2.33	1.09	.74	.46
OC TANG	1.71	.92	75	1.97	1.07	73	1.84	1.00	-1.54	.13
IC NONTANG	3.99	.80	75	4.05	.98	73	4.02	.89	-.40	.69
MC NONTANG	3.33	.84	75	3.13	1.09	73	3.23	.97	1.29	.20
OC NONTANG	2.80	1.03	75	2.56	2.31	73	2.68	1.07	1.40	.16
IC SN	6.73	2.58	75	7.56	2.32	73	7.14	2.48	-2.06	.04*
MC SN	6.98	2.71	75	6.15	2.90	73	6.07	2.80	-.36	.72
OC SN	5.65	2.98	75	5.51	2.99	73	5.58	2.97	.30	.77

NOTE: All t-tests have 146 df.

***p*<.01; **p*<.05*

A t-test for dependent means was conducted comparing the amount of nontangible and tangible received support. In both samples, participants reported receiving more Nontangible support (High School: M = 10.12, SD = 1.83; College: M = 9.73; SD = 2.34) than Tangible support (High School: M = 7.44, SD = 2.38; College: M = 7.34; SD = 2.45). These were statistically significant differences in both cases (High School: $t(74) = 10.58$, $p < .001$; College: $t(72) = 9.54$, $p < .001$).

Correlations (Hypotheses 1 & 2)

A Pearson correlation test was conducted with each support scale and the CESD-R for both high school (Table 5a) and college samples (Table 5b). As expected from hypothesis 1, the availability scale (LASSI) was negatively correlated with depression for both samples. Within the high school sample, when participants identified more people within their most intimate level (inner circle) and the least intimate level (outer circle), there was a significant negative correlation with depression. However, in the college population, there was no significant correlation between social network size within any levels of intimacy and depression.

Contrary to hypothesis one for received support, there were no significant relationships between the amount of received support at any level of intimacy and depression in either the high school or college sample.

Table 5.

Correlations of CESD-R and Support Scales

(a) High School Students

Variables	CESD-R	LASSI	IC TANG	MC TANG	OC TANG	IC NONTANG	MC NONTANG	OC NONTANG	IC SN	MC SN	OC SN
CESD-R	1										
LASSI	**-.58****	1									
IC TANG	.01	.15	1								
MC TANG	.11	.03	.26	1							
OC TANG	-.12	.15	.29	**.41****	1						
IC NONTANG	.14	**.29***	**.46****	**.28***	**.27***	1					
MC NONTANG	-.07	**.31****	.04	.28	.10	**.25****	1				
OC NONTANG	.06	.15	.03	.30	**.46****	.04	**.30****	1			
IC SN	**-.43****	**.44****	.06	.04	.20	.07	.15	.10	1		
MC SN	-.15	.10	.00	.13	.13	.14	.05	.11	**.47****	1	
OC SN	**-.39****	.19	.00	.17	.10	.03	.10	.08	**.47****	**.75****	1

*-- $p < .05$ (2-tailed); **-- $p <$ .0.001 level (2-tailed)

NOTE: CESD-R = Center for Disease Control Depression Scale, Revised; LASSI = Late Adolescent Social Support Inventory; IC, MC, OC TANG = ratings of social support on Tangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle); IC, MC, OC NONTANG = ratings of social support on Nontangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle); IC, MC, OC SN = Number of people listed in the respective circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle)

Table 5 Continued.

(b) College Students

Variables	CESD-R	LASSI	IC TANG	MC TANG	OC TANG	IC NONTANG	MC NONTANG	OC NONTANG	IC SN	MC SN	OC SN
CESD-R	1										
LASSI	**-.50****	1									
IC TANG	-.03	.12	1								
MC TANG	-.13	.10	**.37****	1							
OC TANG	.17	.18	.19	**.42****	1						
IC NONTANG	.11	.10	**.44****	.18	.10	1					
MC NONTANG	.01	.18	.21	**.62****	.22	**.29****	1				
OC NONTANG	.07	.06	.19	**.39****	**.62****	.21	**.45****	1			
IC SN	-.03	.10	-.06	.09	.16	.14	.19	.12	1		
MC SN	-.09	.07	.06	.19	.14	.08	**.33****	**.33****	**.41****	1	
OC SN	.01	.03	.02	.03	.01	-.07	**.28***	.19	**.38****	**.58****	1

*-- $p < .05$ (2-tailed); **-- $p < 0.001$ level (2-tailed)

NOTE: CESD-R = Center for Disease Control Depression Scale, Revised; LASSI = Late Adolescent Social Support Inventory; IC, MC, OC TANG = ratings of social support on Tangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle); IC, MC, OC NONTANG = ratings of social support on Nontangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle); IC, MC, OC SN = Number of people listed in the respective circles (i.e., IC = Inner Circle, MC = Middle Circle, and OC = Outer Circle)

Contrary to hypothesis 2, received support did not predict a strong positive correlation with availability of support. In some cases, the LASSI showed a significant positive correlation with received support such as nontangible inner and nontangible middle levels of intimacy in the high school population. However, this was not the case for the college sample or for the remaining received support scales in the high school sample. These inconsistencies in correlations for received support measures with the LASSI indicate that these measures are not a strong predictor with the LASSI.

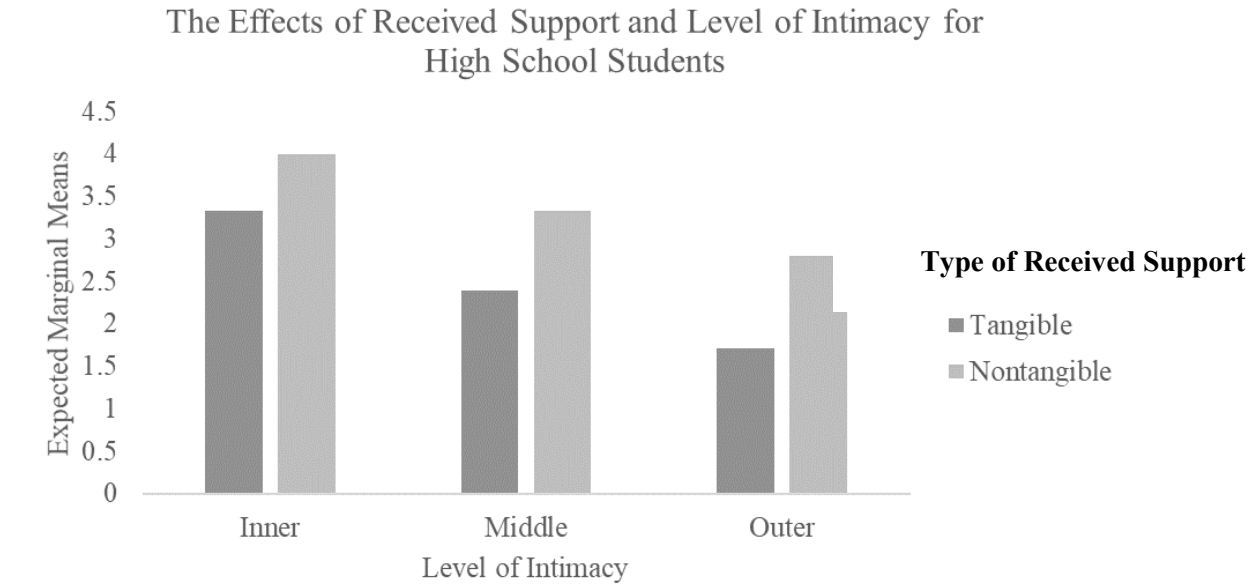
Support Type and Intimacy Level (Hypothesis 3)

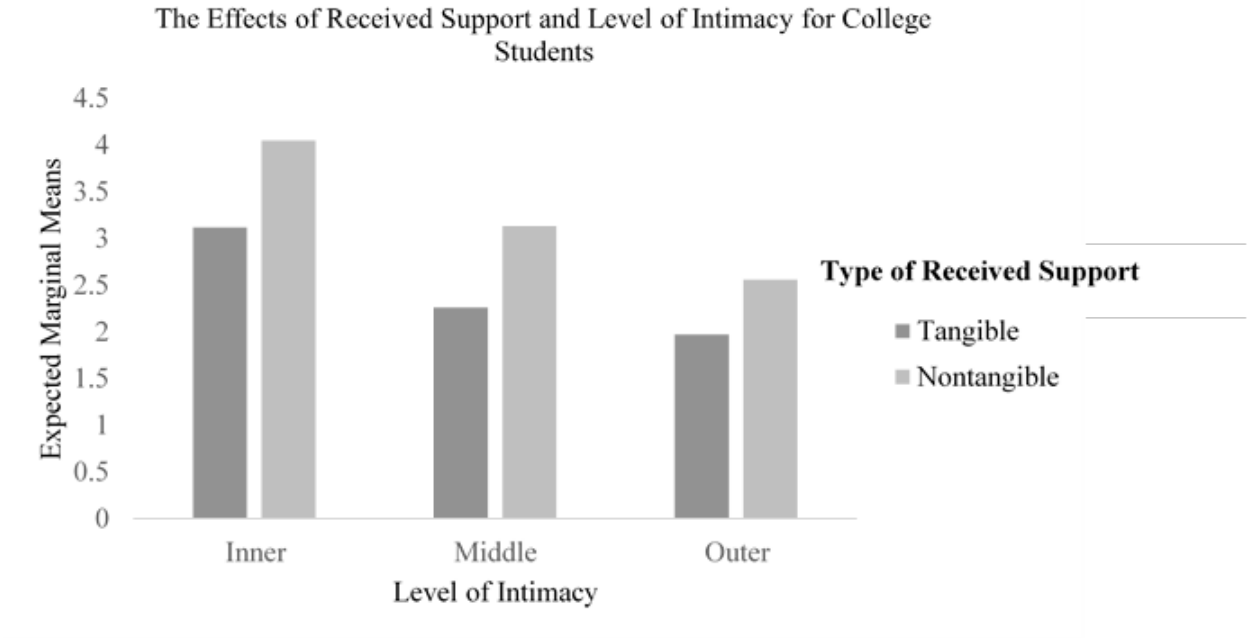
A two (repeated-measures: support type) X three (repeated measures: level of intimacy) X two (between participants: source – high school or college) repeated measures ANOVA was conducted on total received support. There were main effects for both support type ($F(1, 146) = 202.26$, $p < .001$) and intimacy level ($F(2, 292) = 131.39$, $p < .001$). The three-way interaction was also significant ($F(2, 292) = 6.10$, $p < .01$).

As previously discussed in the third research question, participants reported receiving more non-tangible support than tangible support at all levels of intimacy as expected. Participants reported receiving more total support from people in the inner circle (M=3.62, SD = 0.88) than from the middle circle (M=2.78, SD = 0.88) which was greater than the amount received from the outer circle (M = 2.26, SD = 0.90). Simple pairwise comparisons are significant for each level of intimacy (p<.05, Bonferroni corrected). However, the size of this difference varied for each level of intimacy and for the different samples (Figure 1). Specifically, for high school students, the difference between tangible and non-tangible support got larger as they moved from describing people in their inner circle, to the middle circle, to the outer circle. In contrast, the difference between tangible and non-tangible support got smaller as they moved

from describing people in their inner circle to their middle circle to their outer circle. Simple pairwise comparisons at a Bonferonni-corrected $\alpha = .05$ show that total received support is significantly different at each level of intimacy.

Figure 1.





Predicting Depression (Hypotheses 4 and 5)

Two separate stepwise regressions were used to examine the ability of social network size, received support (Tangible and Nontangible), and availability of support to predict depression scores for both high school and college samples (Table 6a and 6b). The total number of people mentioned in participants' social network was entered in the first step. For Model 2, Total Tangible and Total Nontangible support was entered. Finally, LASSI scores were entered in Model 3.

As hypothesized for research questions 4, in the high school sample (Table 6a), the total network size had a significant relationship with CESD-R scores. However, contrary to hypothesis 5, the addition of received support weakened the prediction yet the prediction still was significant. Adding the LASSI for Model 3, greatly increased the variance accounted for depression. The LASSI accounted for 29% of the variance in depression, $p < .001$. In addition, total social network size accounted for 6% of the variance of depression, $p = .008$. On the other hand, total nontangible support tended to have a positive relationship with depression and accounted for 4% of the variance, $p = .031$. In the final model, the coefficients for network size and for nontangible support were significant, but the size of the coefficients were far smaller than the significant coefficient for the LASSI suggesting the contrary to predictions made regarding network size and received support being a strong predictor of depression.

The same stepwise regression examined the ability of social network size, received support (Tangible and Nontangible), and availability of support to predict depression scores for the college sample (Table 6b). In the college sample, the total network size did not have a significant relationship with CESD-R scores which is contrary to hypothesis 4. Similarly, the addition of the received support scales did not significantly increase the prediction either. However, in Model 3 when the LASSI was added to the prediction, there was a significant

relationship between the LASSI and the CESD-R. No other predictors were significant with the CESD-R. In the final model, the LASSI had the largest and only significant coefficient. The availability of support explained for 27% of the variance in depression., $p < .001$.

Table 6.

Stepwise Regression Predicting Depression Using Total Network Size and Total Received Support

(a) High School Sample

	Model 1		Model 2		Model 3	
	B	B	B	B	B	B
Total Number	-.033	-.383**	-.034	-.395**	-.022	-.255**
Total Tangible	---	---	.012	.049	.004	.018
Total NonTangible	---	---	.011	.034	.077	.237*
LASSI	---	---	---	---	-.541	-.595**
R^2	.15		.15		.44	
adj. R^2	.14		.12		.41	
F(df)	12.54 (1, 73)**		4.23 (2, 71)**		13.87 (1, 70)**	
ΔR^2	---		.01		.29	
ΔF	---		.21		36.47	

(b) College sample

	Model 1		Model 2		Model 3	
	B	B	B	β	B	B
Total Number	-.004	-.048	-.008	-.087	-.006	-.073
Total Tangible	---	---	-.019	-.082	-.032	-.134
Total NonTangible	---	---	.039	.159	.066	.265
LASSI	---	---	---	---	-.399	-.526**
R^2	.00		.02		.29	
adj. R^2	-.01		-.03		.24	
F(df)	.17 (1, 71)		.40 (2, 69)		6.79 (1, 68)**	
ΔR^2	---		.02		.27	
ΔF	---		.52		25.53	

* - p < .05; ** - p < .01

NOTE: Total Number = Number of people listed in all respective circles; Total Tangible and NonTangible = ratings of social support on Tangible and NonTangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles; LASSI = Late-Adolescence Social Support Inventory.

Two separate stepwise regressions were used to examine the ability of the social network size for each intimacy level (inner, middle, and outer), total received (Tangible and Nontangible) support for each intimacy level, and availability of support to predict depression scores for both high school and college samples (Table 7). The total number of people for each intimacy level (inner, middle, and outer) in the participants' social network was entered in the first step. For Model 2, Total Tangible and Total Nontangible support for each intimacy level was entered. Finally, LASSI scores were entered in Model 3.

Within the high school sample (Table 7a), the total network size for each intimacy level had a significant relationship with the CESD-R; however, the prediction only increased slightly when the received support scales were added in Model 2 and no additional significant relationships were added from the received support scales. In Model 3, when the LASSI scores were added to the prediction, there was a significant increase in prediction for depression in which availability of support accounted for 21% of the variance in depression, $p < .001$. In addition, there were significant coefficients for the total outer social network size and the inner nontangible total support. The LASSI coefficient was much larger than both the outer social network size and the nontangible outer total support. The total outer social network size accounted for 7% ($p = .002$) of the variance of depression and total inner nontangible support accounted for 5% ($p = .007$) of the variance of depression. The more that high school participants identified people in the outer social network size, the less likely they were to be depressed. Conversely, the more inner nontangible support identified by high school participants, the more likely they were to be depressed.

The same stepwise regression examined the ability of social network size for each intimacy level (inner, middle, and outer), total received (Tangible and Nontangible) support for

each intimacy level and availability of support to predict depression scores for the college sample (Table 7b). In the college sample, the total network size of each intimacy level did not have a significant relationship with CESD-R scores. Similarly, the addition of the received support scales did not significantly increase the prediction either. However, in Model 3 when the LASSI was added to the prediction, there was significant relationship between the LASSI and the CESD-R. Additionally, within Model 3, the total outer Tangible support was significant with CESD-R too. In the final model, the LASSI had the largest coefficient and the size of the coefficient for outer tangible support was much smaller than the significant coefficient for the LASSI. The availability of support explained 20% of the variance in depression., $p < .001$.

Predicting Availability of Support (Hypothesis 2)

Another stepwise regression was used to examine the ability of social network size for each intimacy level (inner, middle, and outer) and the total received (Tangible and Nontangible) support for each intimacy level to predict availability of support in each sample. The first step included the social network size of each concentric circle (inner, middle, and outer). For Model 2, Total Tangible and Total Nontangible support for each intimacy level was entered.

Within the high school sample (Table 8a), the total network size for each intimacy level had a significant relationship with the LASSI; however, the prediction only increased slightly when the received support scales were added in Model 2. In Model 2, both the total inner social network number and the total inner nontangible support were significant predictors of availability of support. The total inner social network number coefficient was larger than the total inner nontangible support coefficient. The total inner social network size accounted for 14% of the variance in availability of support ($p < .001$) and the total inner circle nontangible support.

Table 7.

Stepwise Regression Predicting Depression Using Network Size and Received Support in Intimacy Level

(a) High School Students

	Model 1		Model 2		Model 3	
	B	B	B	β	B	B
Inner Number	-.090	-.389**	-.079	-.341**	-.021	-.092
Middle Number	.093	.420**	.085	.385*	.048	.219
Outer Number	-.104	-.518**	-.107	-.533**	-.085	-.424**
Inner Tangible	---	---	-.023	-.044	-.016	-.031
Middle Tangible	---	---	.117	.220	.074	.140
Outer Tangible	---	---	-.102	-.157	-.105	-.162
Inner NonTangible	---	---	.100	.134	.218	.291**
Middle NonTangible	---	---	-.045	-.063	.026	.037
Outer NonTangible	---	---	.001	.002	.033	.058
LASSI	---	---	---	---	-.513	-.564**
R^2	.30		.36		.57	
adj. R^2	.27		.27		.50	
F(df)	10.29 (3, 71)**		4.03 (6, 65)**		8.31 (1, 64)**	
ΔR^2	---		.06		.21	
ΔF	---		.94		30.37**	

Table 7 Continued

(*b*) College Students

	Model 1		Model 2		Model 3	
	B	B	B	B	B	B
Inner Number	-.003	-.011	-.024	-.095	-.003	-.011
Middle Number	-.029	-.146	-.031	-.154	-.031	-.155
Outer Number	.019	.099	.025	.128	.014	.070
Inner Tangible	---	---	-.036	-.075	-.005	-.010
Middle Tangible	---	---	-.177	-.320	-.161	-.292
Outer Tangible	---	---	.194	.360	.091	.170*
Inner NonTangible	---	---	.100	.169	.089	.151
Middle NonTangible	---	---	.092	.174	.123	.230
Outer NonTangible	---	---	-.050	-.095	.004	.007
LASSI	---	---	---	---	-.367	-.484**
R^2	.02		.14		.34	
adj. R^2	-.03		.01		.24	
F(df)	.35 (3, 69)		1.12 (6, 63)		3.21 (1, 62)**	
ΔR^2	---		.12		.20	
ΔF	---		1.49		19.18**	

* - $p < .05$; ** - $p < .01$

NOTE: Inner, Middle, Outer Number = Number of people listed in the respective circles; Inner, Middle, Outer Tangible and NonTangible = ratings of social support on Tangible and NonTangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles; LASSI = Late-Adolescence Social Support Inventory

explained 5% of the variance in availability of support, $p = .023$. If a high school participant had a larger total network size in the inner circle, then they were more likely to have a higher amount of availability of support. Similarly, when there was higher nontangible support in the inner circle, then there was a higher amount of availability of support.

Within the college sample (Table 8b), the same stepwise regression was used. The stepwise regression was used to examine the ability of social network size for each intimacy level (inner, middle, and outer) and the total received (Tangible and Nontangible) support for each intimacy level to predict availability of support in the college sample. The first step included the social network size of each concentric circle (inner, middle, and outer). For Model 2, Total Tangible and Total Nontangible support for each intimacy level was entered. Total network size by intimacy level had no significant relationship with the LASSI scores. In addition, the total received support for each intimacy level did not have a significant relationship with the LASSI. Although, in Model 2 of the college sample, the total outer social network number had a significant relationship with the LASSI. However, the size of the coefficient for total outer circle network size was exceedingly small. The total outer circle network size accounted for 7% of the variance in the availability of support, $p = .023$. When there was higher tangible support in the outer circle, then there was a higher amount of availability of support. Thus, this again refutes hypothesis 2 that the received support may be another predictor related to availability of support.

Table 8.

Stepwise Regression Predicting Availability of Support(LASSI) Using Network Size and Received Support in Intimacy Level

(a) High School Students

	Model 1		Model 2	
	B	B	B	B
Inner Number	.126	.495**	.114	.450**
Middle Number	-.056	-.231	-.073	-.300
Outer Number	.029	.130	.044	.203
Inner Tangible	---	---	.012	.021
Middle Tangible	---	---	-.083	-.142
Outer Tangible	---	---	-.014	-.020
Inner NonTangible	---	---	.233	.283**
Middle NonTangible	---	---	.134	.173
Outer NonTangible	---	---	.062	.100
R^2	.22		.35	
adj. R^2	.19		.26	
F(df)	6.88 (3, 72)**		3.99 (6, 66)**	
ΔR^2	---		.13	
ΔF	---		2.19	

(b) College Students

	Model 1		Model 2	
	B	B	B	B
Inner Number	.033	.103	.049	.152
Middle Number	.013	.049	.004	.017
Outer Number	-.005	-.020	-.027	-.110*
Inner Tangible	---	---	.090	.143
Middle Tangible	---	---	.029	.040
Outer Tangible	---	---	-.258	-.366
Inner NonTangible	---	---	-.022	-.029
Middle NonTangible	---	---	.091	.132
Outer NonTangible	---	---	.127	.180
R^2	.02		.13	
adj. R^2	-.03		.02	
F(df)	.36 (3, 73)		1.13 (6, 67)	
ΔR^2	---		.12	
ΔF	---		1.50	

* - $p < .05$; ** - $p < .01$

NOTE: Inner, Middle, Outer Number = Number of people listed in the respective circles; Inner, Middle, Outer Tangible and NonTangible = ratings of social support on Tangible and NonTangible dimensions of the UCLA-SSI Scale by a randomly selected person listed for each of the three circles

Discussion

Other studies have found mixed results when comparing received support with depression. The purpose of this study was to get a better understanding of how useful received support is in predicting depression and whether using a social network in conjunction with a received support measure could increase the relationship of measured received support with depression. The research looked to add to the literature on received support and social networks among adolescents because of the limited number of studies in these areas. In addition, this study sought out the opportunity to compare availability of support to received support in the context of social networks.

The first research questions were focused on whether availability of support and received support separately had a negative correlation with depression. However, unlike the initial hypothesis, there was no relationship between received support scales and depression within any level of intimacy or total received support. Similar to received support studies that did not focus on social networks, this study suggests that received support did not have a significant relationship with depression even when using social networks to more precisely identify received support (Hartley & Coffee, 2019; Lakey & Orehek, 2011; Thoits, 2011). Like previous research, however, availability of support was negatively correlated with depression across both the high school and college samples.

It is important to note that stepwise regression that predicted outcomes for availability of support did improve predictions for the inner social network number and the inner nontangible received support for the high school sample. However, this was inconsistent with the college sample in which only the outer social network number of intimacy predicted better outcomes for the LASSI. This further refutes the first hypothesis regarding there being a positive correlation

between received and availability of support. Given that received support did not consistently predict availability of support for high school and college participants.

The second research question asked whether there was a positive correlation between availability of support and received support. Contrary to the second hypothesis, no consistent meaningful correlation was observed between received support measures and availability of support which is similar to comparisons made in the past (Dunkel-Schetter & Bennett, 1990). Although there was a significant relationship between nontangible received support in the inner and middle circles of intimacy in the high school sample with the LASSI, there was an inconsistency in a significant relationship between all received support scales and the LASSI and none of the received support scales in the college sample had a significant relationship with the LASSI. This further supports the conclusions of past research that received support and availability of support maintains an inconsistent relationship with one another (Lakey & Orehek, 2011; Thoits, 2011). Results from this study suggest further exploring availability of support may be a fruitful line of research, as received support was not correlated with either availability of support or depression. It is possible visible support has a negative impact on recipients, as demonstrated by Bolger et al., (2000), which may mask any positive effects of received support. When a person recognizes they are receiving support from others, they may feel a sense of weakness and/or a sense of obligation to the person providing support.

The third set of research questions set to determine whether received support was larger in more intimate relationships. When further investigating the relationship of social support for level of intimacy, it was clear that more received support, both tangible and nontangible social support, was higher for participants in the more intimate levels of the social network. This indicates that people were more likely to get social support from those they perceived to be

closer to in their social network than individuals deemed not as close (within the middle or outer circles). In addition, the third set of research questions asked to see if there was a higher amount of nontangible support compared to tangible support across intimacy levels. The findings suggested that participants were more likely to identify more nontangible received support compared to tangible received support across levels of intimacy. Participants were more likely to identify nontangible received support than tangible received support in the inner circle, middle circle, and outer circle. Although there were significant differences in received support across intimacy level, received support had, at best, a small relationship with depression. Even though participants identified more received support for more intimate relations, there was no evidence that the more received support identified had any significant correlation with depression.

Initially, it was predicted that total network size (hypothesis 4), total network size of the inner circle (hypothesis 4), total received support (hypothesis 5), and received support (hypothesis 5) within the inner circle would predict depression. Only total network size was a significant predictor of depression when using stepwise regression in the high school sample. Similarly, the number of social network members within high school participants' outer circle did improve prediction with depression using a stepwise regression. This is consistent with other studies that have focused on the amount of support from a social network in which higher amounts of identified close relations were positively related to positive self-concept, mood and lower levels of depression (Levitt et al., 1993; Werner-Seidler et al., 2017). However, social network size was not predictive of depression among the college sample. In other words, the number of social network members across intimacy levels did not improve the prediction of depression among college participants.

This inconsistency within the college and high school samples makes it difficult to assess the impact of having a larger social network size in a specific level of intimacy and the effect it may have on social support or depression. When looking closer at the interaction for the two by three by two repeated measure ANOVA, the size of the difference between tangible support and non-tangible support became larger for high school students as intimacy levels became more distant, whereas the size of the difference between tangible and nontangible support became smaller across more distant intimacy levels for college students. A possible explanation for the difference for high school and college students is that college students may be receiving less tangible received support from their most intimate circle because they are physically further away from their inner circle because they are away at college. They may still be receiving nontangible received support from their inner circle which makes the size difference between the two received supports larger. In addition, college students may be getting more received tangible support from their lesser intimate friends (outer circle) because their outer circle may be physically closer. This would add to the gap between tangible and nontangible supports narrowing across less intimate social networks.

In contrast, high school students most likely live relatively close to their inner circle network members and may be more likely to get both tangible and nontangible received support from these inner circle network members. This explains why the difference between tangible and nontangible support in the most intimate level is relatively small for high school students. Thus, the difference between tangible and nontangible support may have widened across more distant levels of intimacy because high school students may be less likely to get tangible received support from more distant intimate (middle and outer circles) network members compared to their inner circle who may be more readily available to them.

In the current study, availability of support in the college and high school samples had a significant negative correlation with depression. Stepwise regression that aimed to predict depression was used to determine if social network size or received support helped to buffer against depression (hypothesis 4 and 5). The stepwise regression that predicted depression indicated that the LASSI was the best predictor for depression within both samples and accounted for most of the variability within the high school and college samples. This was consistent with the literature for availability of support in which having more availability of support has been associated with lower levels of depression or more beneficial outcomes such as buffering stress (Hartley & Coffee, 2019; Katainen et al., 1999; Sarason et al., 1983) This further suggests the validity of the LASSI as a availability of support measure that can be used for further studies in social support.

There were similar inconsistencies for total inner received support when using stepwise regression to predict depression scores. The inner circle nontangible for the high school sample was a significant predictor with depression and so was the outer circle tangible support for the college sample. However, this may have been due to more random chance as very few received support scales were shown to improve the prediction of depression scores. This is consistent with previous research that has shown that received support scales have had mixed results in predicting depression or well-being (Barrera, 1986; Lakey & Orehek, 2011).

The difference between tangible and nontangible received support across intimacy level in college and high school students is vital in understanding that differences in populations can fluctuate drastically for received support. This may further help explain why it is difficult to find a meaningful relationship between received support and depression because the differences in received support across samples can vary significantly even across populations that may be

similar in age. In addition, various intimacy levels of tangible and nontangible received support sometimes had a significant positive relationship with depression indicating that receiving more support correlated with a person being depressed. This may suggest that receiving support could have associated detrimental effects, in that people who receive more support may be more likely to experience reduced well-being, depression, or need more help than others (Barrera, 1986; Uchino, 2009).

Limitations

One limitation of this study was the response rate for this study. A large number of participant data needed to be removed from the final sample. For example, participant data was removed if the participant did not complete all survey items or completed items disingenuously (e.g., filling out the Social Convoy Model by indicating animals in their network). In the future it may be beneficial to provide examples before having students map out their social network to get students to identify network members appropriately. This was consistent across college and high school participants. The small sample is also a limitation. Initially the intention was to combine the high school and college participant data into one sample; however, significant differences in the social network size within in the inner circle between high school and college participants required separate analyses.

Another limitation was the Social Convoy Model only allows participants to select up to 10 people in each intimacy level. Limiting participants to 10 people, may not reflect a person's actual social network size. As for the difference for social network size for inner and outer circles, it may be possible that high school participants have more readily available inner social network members available to them compared to college students who may be separated from their inner social network members by living on a college campus.

This research study was conducted during the COVID-19 pandemic, which may have influenced the results of this study. For instance, the amount of received and availability of support may have been reduced or increased for participants during the pandemic. There may have been fewer opportunities to receive support from friends, family, and peers during the pandemic because interactions in large group settings were discouraged. The impact of COVID-19 may have also influenced depression scores as more students may have felt more isolated during the pandemic.

Another limitation is that the received support for this study was actually a perceived received measure as this measure still relied on self-report to gather information of how often a person felt that they were getting supported. In addition, received support was an estimation because participants were asked about received support from three individuals within their social network rather than getting a sense of their total received support from every individual listed in their social network. These limitations highlight how difficult it is to measure received support precisely. Researchers should continue to develop a received support measure that coincides with social networks to gain a more precise reflection of received support by having a received support measure fully developed that uses a social network mapping to ask directly how much support they received from social network members.

Another key limitation of the study was that the UCLA-SSI also did not initially form the intended three factors intended for constructs of received support. It may be advantageous to find a received support measure that has more consistent constructs for the received support scales. Additionally, the UCLA-SSI was modified to create a received support measure that answered information regarding received support for specific individuals in a social network. It may be more useful to create a received support measure that specifically focuses on answering items

about received support for specific social network members instead of amending a received support measure that was not originally intended for this purpose. It is also important to consider cofounding variables such as age, socioeconomic status, family history of depression, and prevalence of other mental health disorders. Age may impact studies regarding social networks because the size of the network may change based on stages of life. For example, college students may favor relations with friends in their most intimate level whereas high school students may value more family-based relations in their most intimate level of the social network.

Future research

Future research may benefit from further studying social networks and determining if total network size relates to depression. It is important to note that the effects of a social network may vary across different populations and the size of the network may impact certain demographics with different results. Instead of focusing specifically on received support within the context of social networks, investigating the relation between the size of the most intimate network and availability of support to determine which is a better predictor of depression. Network size should be considered because it is possible that too big of a network can relate to depression as other researchers have suggested in which having identified too many friends may have had determinal effects on adolescents with a disjointed social network (Falci & Mcneely, 2009).

It may still be useful to consider the discrepancy of received support depending on availability of social support. For instance, the amount of emotional support needed may exceed the actual received support, which may be related to a person being depressed (Rankin et al., 2018; Rodriguez et al., 2018). Further research may be needed to assess the discrepancy model

for received and availability of support to determine if the comparison between the two measures may be more useful than researching availability of support exclusively. It appears that received support may be better utilized by considering it in the context of availability of support because received support alone has not resulted in a meaningful relationship with depression.

Also, it may be useful to assess the context of the relationship participants had with those they reported within their social network. For instance, it may be important to know how many friends or family members were identified in the most intimate level. It may be useful looking at how many friends or family members are identified at the most intimate level as other research has suggested that emotional closeness with specific members of family such as mothers, may buffer against depression during the occurrence of negative life events (Ge et al., 2009).

Another possible use that could be offered is that the LASSI may be looked at in the context of rating scales in the school setting along with depression scales. Part of the reasoning is that if availability of support correlates well with depression, using a social support scale may be a better indicator to use to screen for depression because students may not always provide accurate results if they fill out a scale when they are aware of what it is measuring in an effort to control their presentation of factors such as symptoms of depression.

Another potential benefit to using an availability of support measure in schools or for adolescents is that it may help in identifying potential interventions for students. If the measure identified that the student had a low availability of support, then cognitive behavioral therapy techniques could be used to manipulate faulty thinking about availability of support or behavioral techniques can be used to increase pleasurable activities for students. However, more research is needed to determine appropriate interventions for students who have low availability of support.

Conclusions

Overall, the results from the study indicated that availability of support consistently was the best predictor of depression. Even though some social network and received support scales did predict depression scores, these scales were not consistent across samples or intimacy levels and the Beta coefficients were never as strong as availability of support. Thus, the LASSI was given further validation of availability of support construct that is a good predictor of depression scores. Like previous research, higher availability of support has been linked to buffering stress during difficult events and correlates reversely with depression (Norris & Kaniasty, 1996; Rodriguez et al., 2018; Stice et al., 2004) This provides evidence that availability of support is a better predictor than received support even when received support is being measured through a social network.

It is of value to note that received support was provided most by more intimate members of a social network. This was consistent where participants identified more received support, tangible and nontangible, for more intimate relationships compared to less intimate members of their social network. However, received support still did not significantly predict depression scores and social network size inconsistently predicted depression scores. This finding is consistent that social network size has shown mixed results (i.e., network size positively correlating with availability of support; (Barrera et al., 1981) and network size not having direct effects on health and well-being; (Huxhold et al., 2013). It may be that identifying people within a social network may be another construct that relates to availability of support. Even if this were true, availability of support remains the best predictor for depression.

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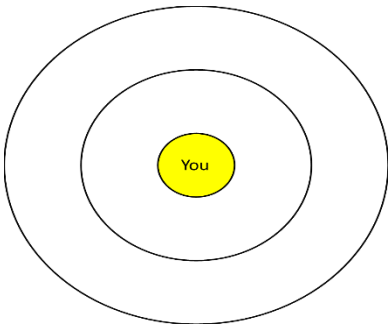
Appendix

Social Convoy Model

Inner Circle diagram

In this diagram, there are three circles. ***You*** are in the center of the circles. The first circle (Yellow) is for all of the people who you are closest to. Think of the people in your life that you can't imagine living without. Those people belong close to you in the yellow circle.
Please list the initials of up to ten of these people in the spaces below you can't imagine living without. Those people belong close to you in the yellow circle.

List only people who belong in the Yellow Circle, that is, only people you can't imagine living without.



You do not have to fill all ten spaces.

- Person 1 (1) _____
- Person 2 (2) _____
- Person 3 (3) _____
- Person 4 (4) _____
- Person 5 (5) _____
- Person 6 (6) _____
- Person 7 (7) _____
- Person 8 (8) _____

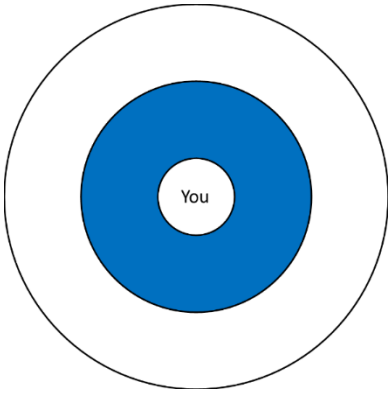
○ Person 9 (9) _____

○ Person 10 (10) _____

Middle Circle diagram

Here is the diagram again. **You** are still in the middle of the circle. But now we would like you to list people who you may not feel as close to as the people you listed in the previous question (yellow circle), but they are people who are important to you and are still big parts of your social network. Please list the initials of up to ten of these people in the spaces below.

List only people who belong in the Blue Circle, that is, only people important to you, but who do not belong in the Yellow Circle.



You do not have to fill all ten spaces.

List only people who belong in the Blue Circle, that is, only people important to you, but who do not belong in the Yellow Circle. You do not have to fill all ten spaces.

○ Person 1 (1) _____

○ Person 2 (2) _____

○ Person 3 (3) _____

○ Person 4 (4) _____

○ Person 5 (5) _____

○ Person 6 (6) _____

○ Person 7 (7) _____

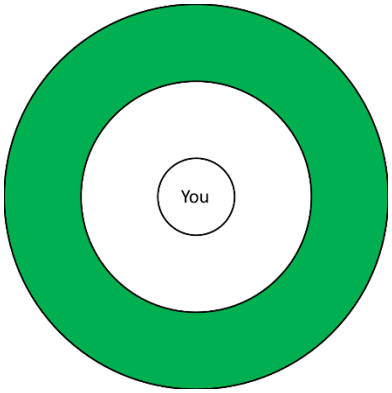
○ Person 8 (8) _____

○ Person 9 (9) _____

○ Person 10 (10) _____

Outer Circle diagram

Here is the diagram one more time. The Green Circle is for people who are still part of your social world, but who are not as close as the people in the Blue and Yellow Circles. Please list the initials of up to ten of these people in the spaces below. ***List only people who belong in the Green Circle, that is, only people who you socialize with, but who do not belong in the Yellow or Blue Circles. You do not have to fill all ten spaces.***



Please list the initials of up to ten of these people in the spaces below.

○ Person 1 (1) _____

○ Person 2 (2) _____

○ Person 3 (3) _____

○ Person 4 (4) _____

○ Person 5 (5) _____

- Person 6 (6) _____
- Person 7 (7) _____
- Person 8 (8) _____
- Person 9 (9) _____
- Person 10 (10) _____

Page Break

UCLA Social Support Inventory

UCLA Social Support Inventory Inner Circle (IC)

IC1: Now we are going to ask you to tell us a little more about your relationship with one of the people you put in the inner Yellow circle. Please answer the following questions about this person. Please describe the relationship you have with (Randomized IC Person). Is (Randomized IC Person) your...

- ○ Parent/guardian (1)
- ○ Sibling (2)
- ○ Girlfriend/boyfriend/spouse (3)
- ○ Extended family member (4)
- ○ Friend (5)
- ○ Teacher/coach (6)
- ○ Other (7) _____

ICInfo: Please tell us how often (Randomized IC Person) provided support to you in the last 3 months:
(Although some questions may sound similar, please do your best to answer each question).

IC2: How often did (Randomized IC Person) provide useful information or advice (e.g. provided information to help you make a decision?

IC3: How often did (Randomized IC Person) provide information or advice about your relationship with another person (e.g. conflict with someone, concern about other's opinions, developing a new relationship, etc).

IC4: How often did (Randomized IC Person) provide minor assistance (e.g. doing laundry, a ride somewhere close by, help with a homework assignment, make you lunch, etc?)

IC5: How often did (Randomized IC Person) provide major assistance (e.g. moving, a ride somewhere pretty far away, providing large amount of money etc.)?

IC6: How often did (Randomized IC Person) convey love and caring (e.g. told you that they cared for or appreciated you, gave you a hug or pat on the back, etc.)?

IC7: How often did (Randomized IC Person) convey respect, approval, and/or acceptance (e.g. respect your opinion or beliefs, accepts a mistake you may have made, etc.)?

IC8: How often did (Randomized IC Person) convey encouragement and reassurance (e.g. consoled when upset, offered you praise when facing a new challenge etc.)?

IC9: How often did (Randomized IC Person) listen to your concerns and feelings?

IC10: How often did (Randomized IC Person) understand and empathize with you?

UCLA Social Support Inventory Middle Circle (MC)

MC1 Now we are going to ask you to tell us a little more about your relationship with one of the people you put in the middle Blue circle. Please answer the following questions about this person. Your relationship with (Randomized MC Person) can be described as?

- ○ Parent/guardian (1)
- ○ Sibling (2)
- ○ Girlfriend/boyfriend/spouse (3)
- ○ Extended family member (4)
- ○ Friend (5)
- ○ Teacher/coach (6)
- ○ Other (7) _____

MCinfo Please tell us how often (Randomized MC Person) provided support to you in the last 3 months:

(Although some questions may sound similar, please do your best to answer each question).

MC2: How often did (Randomized MC Person) provide useful information or advice (e.g. provided information to help you make a decision?)

MC3: How often did (Randomized MC Person) provide information or advice about your relationship with another person (e.g. conflict with someone, concern about other's opinions, developing a new relationship, etc)

MC4: How often did (Randomized MC Person) provide minor assistance (e.g. doing laundry, a ride somewhere close by, help with a homework assignment, make you lunch, etc?)

MC5: How often did (Randomized MC Person) provide major assistance (e.g. moving, a ride somewhere pretty far away, providing large amount of money etc.)?

MC6: How often did (Randomized MC Person) convey love and caring (e.g. told you that they cared for or appreciated you, gave you a hug or pat on the back, etc.)?

MC7: How often did (Randomized MC Person) convey respect, approval, and/or acceptance (e.g. respect your opinion or beliefs, accepts a mistake you may have made, etc.)?

MC8: How often did (Randomized MC Person) convey encouragement and reassurance (e.g. consoled when upset, offered you praise when facing a new challenge etc.)?

MC9: How often did (Randomized MC Person) listen to your concerns and feelings?

MC10: How often did (Randomized MC Person) understand and empathize with you?

UCLA Social Support Inventory Outside Circle (OC)

SSI-OC1 Now we are going to ask you to tell us a little more about your relationship with one of the people you put in the outer Green circle. Please answer the following questions about this person. Please describe the relationship you have with (Randomized OC Person).
Is (Randomized OC Person) your...

- ○ Parent/guardian (1)
- ○ Sibling (2)
- ○ Girlfriend/boyfriend/spouse (3)
- ○ Extended family member (4)
- ○ Friend (5)
- ○ Teacher/coach (6)
- ○ Other (7) _____

OC1: Please tell us how often (Randomized OC Person) provided support to you in the last 3 months:

(Although some questions may sound similar, please do your best to answer each question).

OC2: How often did (Randomized OC Person) provide useful information or advice (e.g. provided information to help you make a decision?

OC3: How often did (Randomized OC Person) provide information or advice about your relationship with another person (e.g. conflict with someone, concern about other's opinions, developing a new relationship, etc)?

OC4: How often did (Randomized OC Person) provide minor assistance (e.g. doing laundry, a ride somewhere close by, help with a homework assignment, make you lunch, etc?)

OC5: How often did (Randomized OC Person) provide major assistance (e.g. moving, a ride somewhere pretty far away, providing large amount of money etc.)?

OC6: How often did (Randomized OC Person) convey love and caring (e.g. told you that they cared for or appreciated you, gave you a hug or pat on the back, etc.)?

OC7: How often did (Randomized OC Person) convey encouragement and reassurance (e.g. consoled when upset, offered you praise when facing a new challenge etc.)?

OC8: How often did (Randomized OC Person) listen to your concerns and feelings?

OC9: How often did (Randomized OC Person) understand and empathize with you?

OC10: How often did (Randomized OC Person) convey respect, approval, and/or acceptance (e.g. respect your opinion or beliefs, accepts a mistake you may have made, etc.)?

LASSI

LASSI1: Do people listen to you when you discuss problems you're having at home or school?
LASSI2: Are there people who are attentive to your needs?
LASSI3: Do people close to you help you work out an issue you've had at school or at home?
LASSI4: Are there people who will listen to your innermost feelings without criticizing them?
LASSI5: Can you count on people close to you to give you good advice?
LASSI6: Are there people you can count on to be there for you when you need them?
LASSI7: Are you normally offered support by people close to you during a difficult time?
LASSI8: Are there people who check in with you to see how you are doing?
LASSI9: Are there people who will comfort you?
LASSI10: Do you feel there are people close to you who support your interests?
LASSI11: Do you feel there are people who care about you?
LASSI12: Are there people who are genuinely interested in how your day was?
LASSI13: Do people spend time with you when you need help?
LASSI14: Do you have people who will reassure you after you've had a bad day?
LASSI15: Do people close to you make you feel welcome and good about yourself?
LASSI16: Do you feel that you have guidance when you're struggling with personal problems?
LASSI17: Are there people close to you who you talk over important decisions with?
LASSI18: Do people show you they are proud of you?
LASSI19: Do you feel valued by people close to you?
LASSI20: Do people close to you push you to do your best?
LASSI21: Are there people who enjoy hearing about what you think?
LASSI22: Are there people who help point you in the right direction when you're unsure of what to do?
LASSI23: Do people show you support when you've gone through a difficult time in your life?
LASSI24: Do you feel there are people who will listen to you when you need to talk?
LASSI25: When you feel tense or under pressure, are there people who help you feel more relaxed?
LASSI26: Are there people who have helped you to think of ways to de-stress when you're overwhelmed?
LASSI27: Are there people you turn to for advice with your personal problems?
LASSI28: Are there people who help guide you in thinking about your future?
LASSI29: Are there people you can count on for help over an extended period of time?
LASSI30: Do people offer you advice to help you avoid making mistakes?
LASSI31: Are there people in your life who you can trust to tell you when there is something you can improve on?
LASSI32: Are there people who help you develop your academic and/or career goals?
LASSI33: Do people help you if you're struggling with a concept in class, or a technique for sports/band/other activities?
LASSI34: Do people spend extra time with you to help you work out a problem?
LASSI35: Are there people who help you practice, rehearse, or do schoolwork?
LASSI36: Are there people you can count on in an emergency?

CESD-R

CESD-RINFO Please answer the following questions relating to how often each item has occurred in the last week.
CESD-R1: I was bothered by things that usually don't bother me.
CESD-R2: I did not feel like eating; my appetite was poor.
CESD-R3: I felt that I could not shake off the blues even with help from my family or friends.
CESD-R4: I felt that I was just as good as other people.
CESD-R5: I had trouble keeping my mind on what I was doing.
CESD-R6: I felt depressed.
CESD-R7: I felt that everything I did was an effort.
CESD-R8: I felt hopeful about the future.
CESD-R9: I thought my life had been a failure.
CESD-R10: I felt fearful.
CESD-R11: My sleep was restless.
CESD-R12: I was happy.
CESD-R13: I talked less than usual.
CESD-R14: I felt lonely.
CESD-R15: People were unfriendly.
CESD-R16: I enjoyed life.
CESD-R17: I had crying spells.
CESD-R18: I felt sad.
CESD-R19: I felt that people dislike me.
CESD-R20: I could not get "going".